AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph bridging pages 11 and 12 with the following amended paragraph:

A point P1 at which the endless belt 1 starts contacting with the drive stretching member 2 is exerted with a stretching force F1 of a total of a tension force F5(N) and a force by driving to rotate the driving stretch member 2 by a torque T (N·m). Here, T1 = (T/R1) + F5 (N). Incidentally, notation R1 designates a diameter of moving the drive stretching member 2. Further, a point P2 at which the endless belt 1 starts separating from the stretching member 3 is exerted with a reaction force F2. Here, in order to ~~mov~~<u>move</u> to rotate the endless belt at equal velocity, F2 = F1 = (T/R2) + F6 (N). Incidentally, notation R2 designates a diameter of moving the stretching member 3 and notation F6 designates a tension reaction force.

Please replace the first full paragraph on page 15 with the following amended paragraph:

Therefore, the shear force $\gamma 1$ ($\gamma 2$) exerted to the adhering layer 6 can be minimized by making the length L of the seam portion 5 equal to or larger than the distance ~~L1~~ <u>Lh</u> between the point P1 and the point P2. Further, the shear force $\gamma 1$ ($\gamma 2$) exerted to the adhering layer 6 can be minimized whenever at least a portion of the seam portion 5 is disposed between the point P1 and the point P2.

Please replace the paragraph bridging pages 15 and 16 with the following amended paragraph:

In this way, the endless belt according to the invention can minimize the shear force exerted to the seam portion 5 as shown by Fig. 4, so that the lifetime thereof can be prolonged. The endless belt ~~can b~~can be used as a belt member for a photosensitive film, an image fixing film or the like in an image forming apparatus as mentioned later.

Please replace the first full paragraph on page 19 with the following amended paragraph:

In Fig. 9, numeral 11 designates a developing unit which is provided with a developing roller 11a, a toner supply roller 11b, a toner control blade 11c, and a toner agitator 11d. Numeral 12 designates light ray irradiated from an exposure unit, numeral 13 designates a charging unit, numeral 14 designates light ray irradiated from a discharging unit, numeral 15 designates a cleaner unit, and numeral 16 designates a fixing unit. The fixing unit 16 is provided with a heating roller 16a having a heater H at inside thereof and a pressing roller 16b. Numeral 18 designates a transferring unit which is constituted by the drive stretching member 2 and a transferring roller ~~28a~~18a. Numeral 17 designates recording paper which is carried in a direction of an arrow Q.

Please replace the fifth full paragraph on page 20 with the following amended paragraph:

(8) The toner ~~remaining after the transfer~~, paper powder or the like remaining on the photosensitive member 1 which has passed through ~~is scraped from the photosensitive belt member 1 passing~~ the transferring unit ~~17~~ 18 is scraped off by the cleaner unit 15.

Please replace the last paragraph bridging pages 20 and 21 with the following amended paragraph:

An example of a condition of forming the image is as follows. Drive torque of the drive stretching member 2 is 0.076 (N·m). Therefore, the stretching force F1 of Fig. 1 becomes (0.076/0.0125) + 26 = 32N. The distance between the point P1 and the point P2 is 55mm. The conductive layer of the photosensitive belt member 1 is connected to ~~th~~the ground. As a method therefor, the conducive layer is exposed at an end portion of the belt and is brought into contact with a conductive blush terminal connected to the ground. With regard to rotational speed of the photosensitive belt member, surface speed is 215mm/sec and paper passing speed is 40ppm in passing paper of A4 in the transverse direction.

Please replace the first full paragraph on page 25 with the following amended paragraph:

Also with regard to the stretching member 21b, similarly, stretching forces are F17 = F16 = F15. As in the case of the stretching force F15 discussed above, the stretching force F17 is equal to F24(N) which is a synthesized force of the stretching force F16 and a tension force F21 of the stretching member 21b. Further, a reaction force F18(N) is exerted to point P12 at which the intermediate transferring belt 23 starts separating from the stretching member 21c, and a tension force exerted to the stretching member 21c is designated by notation F22(N). As

magnitude of force, reaction force F18 = stretching force F17. Further, between the point P12 and a point P13, similar to the case at the point P3 and the point P5 of Fig. 1, the stretching force and the friction force received by the intermediate transferring belt 23 from the stretching member 21c are canceled by each other and a force of stretching the intermediate transferring belt 23 is further reduced. The same goes with an interval between a point P14 and a point P7. Therefore, also the force of stretching the intermediate transferring belt 23 is further reduced also between the point P13 and the point P14.

Please replace the second full paragraph on page 26 with the following amended paragraph:

Numeral 39 designates recording paper which is carried in an arrow I direction. Notation 30a designates an intermediate cleaner unit which is separated from and contacted to the intermediate transferring belt 23 in arrows ~~A~~ A' directions. The intermediate transferring belt 23 is circulated in an arrow D direction. Further, the transferring roller 37c is separated from and contacted with the drive stretching member 22 in arrows ~~B~~ B' directions.

Please replace the second full paragraph on page 30 with the following amended paragraph:

(34) The recording paper ~~30~~39 transferred with the full color toner image is carried to the fixing unit 38. At the fixing unit 38, the toner image on the recording paper 39 is melted to fix by heat and pressure.

Please replace the fourth full paragraph on page 33 with the following amended paragraph:

Fig. 13 shows an example of constituting a fixing unit 40 by using the seamed endless belt according to this embodiment. In this figure, numeral 41 designates a fixing belt and numeral 42 designates a heating member provided with a heat generator H and serving as a drive stretching member. Numeral 44 designates a pressing member and numeral 43 designates a stretching member. Also, a recording medium 45 is supplied in a direction K to a position between the belt 41 and the pressing member 44.

Please replace the third full paragraph on page 36 with the following amended paragraph:

ii) Further, by using epoxy resin, urea resin or a thermosetting compound added therewith as the adhering agent, the high adhering strength can be maintained even at high temperature. When the compound is used along with the invention, a fixing belt having longer life can be realized. The fixing unit explained in reference to Fig. 13 can be used in place of the fixing unit 16 of the image forming apparatus described in Fig. ~~19~~9. The endless belt 1 of Fig. 9 in this case having the length of the seam portion of the constitution of the invention can be used. Further, a constitution of a prior art can also be constituted thereby.

Please replace the second full paragraph on page 39 with the following amended paragraph:

A portion of the fixing belt 51 is made to wrap between a point P19 and a point P20 of the heating member 54. An angle of a circular arc between P19 and P20 is 38°. A distance between the point P20 and a point P21 is 10mm, a tension force F28 (F29) between the drive stretching member 52 and the stretching member 53 is 13N and drive torque of the drive

stretching member 52 is 0.13 (N·m). Further, the drive stretching member 52 and the pressing member 54 are pressed by a total load of 10kg.

Please replace the paragraph bridging pages 39 and 40 with the following amended paragraph:

In this case, since the heating member 54 also serves as the drive stretching member, between the point P19 and the point P20, the stretching force and the friction force are canceled by each other, so that a force of stretching the fixing belt 51 is further reduced. Therefore, the driving force is F25 = (0.13/0.0125) + 13 = 23.4N > stretching force F26 = reaction force F27 ~~F28~~. Further, the force of stretching the fixing belt 51 is further reduced also between points P21 and P22 and between points P23 and P19 at which the stretching force and the friction force are cancelled by each other.

Please replace the second full paragraph on page 40 with the following amended paragraph:

Therefore, at a portion of the heating member 54 at which the fixing belt 51 is made to wrap, when the friction force received by the fixing belt 51 of the heating member 54 is designated by notation Fa and a resultant force of the tension force of the drive stretching member 52 and the stretching force received by the fixing belt 51 by the torque of driving to rotate the drive stretching member 52 is designated by notation Fb, Fa and Fb are canceled by each other. Therefore, when a stretching force Fc at the point P19 at which the fixing belt 51 starts separating from the heating member 54, Fc = Fb - Fa < Fb.

Please replace the second full paragraph on page 43 with the following amended paragraph:

Further, between the points P32 and P33, the stretching force F32 is further reduced by a dynamic friction force of the belt and the belt stretching member 53. Therefore, when a stretching force exerted to the belt at the point P33 is designated by notation F33, F33 < F32. Fig. 16 is a schematic view showing the stretching forces exerted to the fixing belt 51 at the respective points P31, P32 and P33. In this figure, white circles and black circles represent that the force F32 (not F33) is exerting to the point P31 in Fig. 15, for example.

Please delete the second and third full paragraphs on page 44:

~~Next, an explanation will be given of equilibrium of forces in the fixing unit shown in Fig. 15. A rotational drive force F31 of the drive stretching member 52 is transmitted to the heating member 54 at the point P31. The drive force F31 becomes a resultant force of a tension force F34 and rotational drive torque of the drive stretching member 52. Between the points P31 to P32, since the drive force F31 and a friction force (caused by a friction torque of the pressing member) are canceled by each other, a force of stretching the belt (stretching force F32) becomes smaller than the drive force F31.~~

~~Therefore, when a stretching force applied to the belt at the point P32 is designated by notation F32, F32 < F31.~~

Please delete the paragraph bridging pages 44 and 45:

~~Further, between the points P32 and P33, the stretching force F32 is further reduced by a dynamic friction force of the belt and the belt stretching member. Therefore, when a stretching~~

~~force exerted to the belt at the point P33 is designated by notation F33, F33 < F32. Fig. 16 is a schematic view showing the stretching forces exerted to the fixing belt 51 at the respective points P31, P32 and P33.~~

Please replace the first, second, and third full paragraphs on page 45 with the following amended paragraphs:

Fig. ~~3~~ 2 is a perspective view showing an ~~xample~~example of an endless belt ~~1~~ used ~~in~~ as the fixing belt 51 shown in Fig. 15. In Fig. ~~3~~ 2, numeral ~~2~~ 4 designates a film, numeral ~~3~~ 5 designates a seam portion overlapping both end portions of the film ~~2~~ 4 and the endless belt ~~1~~ is formed by the film ~~2~~ 4. A film on ~~a lower~~ an upper side of the seam portion ~~3~~ 5 is designated by notation ~~2a~~ 4a and a film on a lower side thereof is designated by notation ~~2b~~4b.

~~Fig. 3~~ Fig. 4 is a schematic view showing forces exerted to the seam portion ~~3~~ 5 of the endless belt ~~1~~. In Fig. 3 ~~Fig. 4~~, ~~numeral 4~~ numeral 6 designates an adhering layer of the seam portion ~~3~~ 5. As shown by Fig. 3 ~~Fig. 4~~, the adhering ~~layer 4~~ layer 6 of the seam portion ~~3~~ 5 of the endless belt ~~1~~ is exerted with a shear force $\gamma 1$ by a stretching force ~~F6~~ F1 and a shear force $\gamma 2$ by a reaction force ~~F7~~ F2.

Here, when a length of the seam portion 5 is designated by notation L(m) and a width of the belt (width of the adhering layer) is designated by notation W(m), ~~$\gamma 1=F6/(L \cdot W)=F7/(L \cdot W)=\gamma 2$ (N/m)=(Pa)~~ $\gamma 1=F1/(L \cdot W)=F2/(L \cdot W)= \gamma 2$ (N/m)=(Pa) is established. Therefore, it is shown that the shear force $\gamma 1$ ($\gamma 2$) is reduced in inverse proportion to the length L of the seam portion. Further, the stretching force ~~F6~~ F1 and the reaction force ~~F7~~ F2 are equal to the stretching force F32 shown in Figs. 15 and 16.

Please replace the paragraph bridging pages 45 and 46 with the following amended paragraph:

Further, when a distance between the point P31 and the point P32 of Fig. 15 is designated by notation Lh(m), in the case of L=Lh, the stretching force ~~F6~~ F1 and the reaction force ~~F7~~ F2 become equal to the stretching force F33 shown in Fig. 16. In view of Fig. 16, ~~F3~~ F33<F32 is established and therefore, the shear force γ1 (γ2) is also reduced. Thereafter, in the case of L>Lh, the shear force is saturated. Fig. ~~5~~ 4 is an explanatory view showing a relationship between the length L of the seam portion and the shear force γ1 (γ2). In view of Fig. ~~5~~ 4, the shear force γ1 (γ2) exerted to ~~th~~the adhering ~~layer 4~~ layer 6 can be minimized by making the length L of the seam portion equal to or larger than the distance Lh between the point P31 and the point P32.

Please replace the paragraph bridging pages 50 and 51 with the following amended paragraph:

Further, by using epoxy resin, urea resin or a thermosetting compound added therewith as the adhering agent, the high adhering strength can be maintained ~~ev n~~even at high temperature. By using such an adhering agent in the fixing ~~d vice~~device of the constitution of the invention, a fixing belt having longer service life can be realized.

Please replace the paragraph bridging pages 51 and 52 with the following amended paragraph:

Fig. 21 is an enlarged view of the seam portion of the endless belt 1. In this figure, notations 6a and 6b designate an adhering layer. When a thickness of the substrate is designated

by notation ds and a thickness of the adhering layer is designated by db, a thickness tb of the belt and a stepped difference ~~ls~~1s are expressed as follows.

tb = ~~2da~~ 2ds + db (1)

~~ls~~1s = ds + db (2)

Please replace the paragraph bridging pages 52 and 53 with the following amended paragraph:

Here, when the endless belt is used by being stretched between stretching ~~m mbers~~members to drive to circulate, the belt member needs to be provided with a predetermined thickness or more in order to achieve a desired strength. When the belt member is provided with the desired strength or less, a time period of use (service life) until the belt member is cracked or broken is shortened.

Please replace the paragraph bridging pages 53 and 54 with the following amended paragraph:

Meanwhile, from Equations (3) and (4), in the case of the belt having the constitution of Fig. 23 ~~3~~, a relationship between the thickness tb1 of the endless belt and the thickness tb2 of the endless belt at the seam portion becomes as follows,

tb2 > tb1 = ds > 300μm

and the thickness of the substrate needs to be equal to or larger than 300μm.

Please replace the second full paragraph on page 54 with the following amended paragraph:

In this embodiment, from Equation (2), each stepped difference becomes as follows.

ls = ds + db = 149.5μm + 1μm = 150.5μm

In contrast thereto, according to the constitution of Fig. 23 ~~3~~, from Equation (5), each stepped difference becomes as follows.

ls = ds + db = 300μm + 1μm = 301μm

Therefore, according to the constitution of the invention, in comparison with the example of Fig. 23 ~~3~~, the stepped difference can be reduced with regard to the predetermined belt thickness in order to achieve a necessary strength.

Please replace the paragraph bridging pages 54 and 55 with the following amended paragraph:

Therefore, when the necessary thickness of the sheet substrate is made to be equal to or larger than x(μm), each stepped difference becomes (x+db)/2 (μm) in this embodiment, and ~~becom s~~becomes equal to or larger than x+db(μm) in the case of the comparative example. Therefore, according to this embodiment, the thickness of the stepped difference can be halved.

Please replace the paragraph bridging pages 55 and 56 with the following amended paragraph:

Generally, when an endless belt wound with a circumference thereof by n times is constituted (n=2 in the example of Fig. 20), the thickness tb and the thickness ls of the stepped difference of the endless belt become as follows.

$$tb = nds + (n-1)db \qquad (10)$$

$$ls = ds + db \qquad (11)$$

When the necessary thickness of the substrate is made to be equal to or larger than x(μm), the following is established from Equation (10).

$$ds > [x - (n-1)db] / n \qquad (12)$$

Further, from Equation (11), the following is established.

$$ls > [x - (n-1)db] / n + db = (x + db) / n \qquad (13)$$

By comparing with Equation (9), the stepped difference of the endless belt of this embodiment can be made to be 1/n of that of the endless belt having the constitution of Fig. 23 ~~3~~.

Please replace the first full paragraph on page 56 with the following amended paragraph:

Fig. 26 shows an endless belt according to an eighth embodiment of the invention in which the stepped difference of the endless belt of Fig. 20 is further reduced. In this figure, notations 4t and 4r designate both longitudinal end portions of the substrate 4, notations 4s and 4u designate wound portions of the substrate 4 and notation 4v designates a stepped portion. Also, in this figure, notations 6r and 6s designate an adhering layer.

Please replace the paragraph bridging pages 62 and 63 with the following amended paragraph:

A comparative example is formed as follows: i) As a substrate, a conductive resin film (dispersed with 20wt% of carbon black powder as a conductive agent in polyurethane resin) having a thickness of 300μm, a width of 340mm and a length of 975mm is used; ii) The film is

formed with an overlapped portion in which both longitudinal end portions are overlapped (see Fig. 22). The overlapped portion is mounted on a hot plate, placed with a flat plate from above, applied with a total load of 60kg and heated for 30 minutes at 290°C; iii) When ~~th~~the section after processing was observed, the film was as shown by Fig. 32; iv) A length of a seam portion is 347mm and a diameter of the formed seamed endless intermediate transfer belt is ϕ200mm.

Please replace the first full paragraph at page 65 with the following amended paragraph:

Conversely, since the resistance value is small at other than the seam portion, and the resistance value at ~~oth r~~other than the seam portion becomes less than a lower limit value in the environment of reducing the resistance value of the HH environment. As a result, it seems that discharge due to extra transfer bias is generated at other than the seam portion and scattering of the toner (no good result) is brought about. Therefore, it is found that the embodiment is easier to confine the resistance value of the intermediate transfer belt in an excellent region than the comparative example.

Please replace the paragraph bridging pages 67 and 68 with the following amended paragraph:

Fig. 27 is a diagram for explaining the temperature conductivity of substance. In this figure, numeral 60 designates a substance, notation Ta designates absorbing temperature and notation Tb designates radiation ~~t mperature~~temperature. With ~~r gard~~regard to Equation (14), consider boundaries p0 and p1 having a length therebetween Lh, for example, a distance of 1m at inside of the substance 60. In this case, in the case in which a temperature rise rate of a hatched

portion between the boundaries is $\Delta t/\Delta\tau$ (°C/sec), when a temperature gradient at the boundary p0 is defined as $(\Delta t/\Delta x)_{p0}$ (°C/m) and a temperature gradient at the boundary p1 is defined as $(\Delta t/\Delta x)_{p1}$ (°C/m), the following equation is established.

Please replace the second full paragraph on page 69 with the following amended paragraph:

Also temperatures of the drive stretching member 52 and the stretching member 53 stretching the fixing belt 51 become higher than room temperature. Under this condition, the recording paper 55 is carried in an arrow J direction of Fig. ~~12~~ 15 and advances into the nip portion. In Fig. 28, numeral 57 designates a toner layer. At this occasion, since temperatures of the toner layer 57 and the recording paper 55 are lower than that of the heating member 54, heat is conducted from the heating member 54 to the toner layer 57 in an arrow Qa direction.

Please replace the paragraph bridging pages 69 and 70 with the following amended paragraph:

At the same time, heat is transmitted also from the fixing belt 51 and the drive stretching member 52 to the toner layer 57 via the recording paper 55 from an arrow Qb direction. At this occasion, in the case of the fixing belt of the comparative example, since the seam portion is formed with a high density portion 58 and the temperature conductivity of the high density portion 58 is low, heat Qc conducted from the drive stretching member becomes lower than the heat Qb at a portion other than ~~th~~the seam portion. ~~Th refore~~Therefore, a heat transfer amount of the seam portion becomes deficient, so that a sufficient amount of the toner layer cannot be melted and the failure in fixing is brought about.